

What is claimed is:

1. Method for multicasting a message to a plurality of users comprising:
establishing a power ratio threshold adapted to enable reliable
5 transmission of said message;
comparing the established power ratio threshold to measured power
ratios associated with said plurality of users;
determining a first subset of the plurality of users and a second subset of
the plurality of users based upon the measured power ratios; and
10 delivering said message to the first subset of the plurality of users via a
first transmission scheme.
2. The method of claim 1, further comprising:
delivering said message to the second subset of the plurality of users via
15 a second transmission scheme.
3. The method of claim 1, wherein:
said first transmission scheme delivering said message to said first user
subset is via a broadcast channel.
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4. The method of claim 2, wherein:
said second transmission scheme delivering said message to said
second user subset is via respective dedicated channels.
- 25 5. The method of claim 1, further comprising:
periodically measuring the respective power ratios of said plurality of
users.
6. The method of claim 1, further comprising:
30 continuously measuring the respective power ratios of said plurality of
users.

7. The method of claim 1 wherein the step of determining is performed by evaluating an equation of the following form:

$$(N - m) = \underset{m}{\operatorname{argmin}} \left(P_B(N - m) + \left(\sum_{i=1}^m P_i \right) \right)$$

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where N is the plurality of users in a given area, $N-m$ is the first subset of the plurality of users, m is the second subset of the plurality of users, $P_B(k)$ is a reliable MBMS broadcast service power level to user k , and P_i is the required power to support user i using a dedicated channel.

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8. A computer readable medium containing a program which, when executed, performs an operation of multicasting a message to a plurality of users comprising:

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establishing a power ratio threshold adapted to enable reliable transmission of said message;

comparing the established power ratio threshold to measured power ratios associated with said plurality of users;

determining a first subset of the plurality of users and a second subset of the plurality of users based upon the measured power ratios; and

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delivering said message to the first subset of the plurality of users via a first transmission scheme.

9. The method of claim 8, further comprising:

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delivering said message to the second subset of the plurality of users via a second transmission scheme.

10. The method of claim 8, wherein:

said first transmission scheme delivering said message to said first user subset is via a broadcast channel.

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11. The method of claim 9, wherein:

said second transmission scheme delivering said message to said second user subset is via respective dedicated channels.

12. The method of claim 8, further comprising:

5 periodically measuring the respective power ratios of said plurality of users.

13. The method of claim 8 further comprising:

10 continuously measuring the respective power ratios of said plurality of users.

14. The method of claim 8 wherein the step of determining is performed by evaluating an equation of the following form:

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$$(N - m) = \underset{m}{\operatorname{argmin}} \left(P_B(N - m) + \left(\sum_{i=1}^m P_i \right) \right)$$

20 where N is the plurality of users in a given area, $N-m$ is the first subset of the plurality of users, m is the second subset of the plurality of users, $P_B(k)$ is a reliable MBMS broadcast service power level to user k , and P_i is the required power to support user i using a dedicated channel.

15. Apparatus for multicasting messages to a plurality of users, comprising:

25 an intermediate multicasting module (IMM) adapted for receiving said messages and collecting information indicative of power transmission requirements, said IMM transmitting said messages via two different transmission schemes according to the power transmission requirement information.

30 16. The apparatus of claim 15 wherein the intermediate multicasting module further comprises a node-B element and a radio network controller.

17. The apparatus of claim 16 wherein the node-B element collects the information indicative of power transmission requirements.

18. The apparatus of claim 15 wherein the information indicative of power transmission requirements is a ratio measure of a pilot power signal broadcast from a source to one of said plurality of users to received power plus noise density of the pilot power signal received by said one of said plurality of users.

19. The apparatus of claim 15 wherein said two different transmission schemes are broadcasting to a first subset of said plurality of users and unicasting to a second subset of said plurality of users.

20. The apparatus of claim 19 wherein the number of the first subset of users is determined by the equation:

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$$(N - m) = \underset{m}{\operatorname{argmin}} \left(P_B(N - m) + \left(\sum_{i=1}^m P_i \right) \right)$$

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where N is the plurality of users in a given area, $N-m$ is the first subset of the plurality of users, m is the second subset of the plurality of users, $P_B(k)$ is a reliable MBMS broadcast service power level to user k , and P_i is the required power to support user i using a dedicated channel.